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| 10/756,846      | 01/13/2004  | Sam Siau             | IMEC323.001AUS      | 1408             |

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| EXAMINER |
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ABRAMOWITZ, HOWARD E

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| ART UNIT | PAPER NUMBER |
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1762

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/756,846

Applicant(s)

SIAU ET AL.

Examiner

Howard E. Abramowitz

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 16-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/19/04, 1/21/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15, drawn to a method , classified in class 427, subclass 437.
- II. Claims 16-21, drawn to a product, classified in class 106, subclass 1.22.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case product could be used for a materially different process such as one that uses a non-polyimide substrate.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Rose Thiessen on 1/25/06 a provisional election was made without traverse to prosecute the invention of group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The term "flexible" in claim 13 is a relative term which renders the claim indefinite. The term "flexible" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Since all solids have some degree of flexibility for the purpose of this office action it will be assumed that all objects are flexible more particularly all polyimide solids will be assumed to be flexible.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1, 2, 10 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US Patent No. 5,269,838).

Referring to claim 1, Inoue et al. discloses a method for coating a polyimide substrate (column 5 line 1) by electrolessly depositing a metal from a solution comprising, a metal source (Ni), a reducing agent an aromatic sulfonic acid (columns 1-2 lines 68-4) and an additive to adjust the pH of the solution (column 4 lines 42-53).

Referring to claim 2, the aromatic sulfonic group can have an apolar chain (column 2 lines 49-53).

Referring to claim 10, the substrates can be cleaned before electrolessly plating them (column 6 line 7).

Referring to claim 13, as discussed above the substrate can be a polyimide and is therefore flexible.

Referring to claim 14, in view of claim 1 where the substrate merely comprises polyimide this claim is taken to mean that the entire substrate consists of polyimide. Inoue et al. discloses that the substrate can be a polyimide substrate (column 5 line 1).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al. (US Patent No. 3,436,233) in view of Lerner (US Patent No. 3,928,148).

Referring to claims 1 and 14, Jackson et al. discloses a method for coating a substrate by electrolessly depositing a metal from a solution comprising, a metal source (Cu), a reducing agent an aromatic sulfonic acid (column 2 lines 26-37, column 3 lines 1-7, column 4 lines 40-45) and an additive to adjust the pH of the solution (column 11 lines 50-55). It discloses that these coatings are useful for making printed circuit boards however it does not disclose using a polyimide substrate (column 1 lines 50-55). However, Lerner teaches that polyimide substrates are used for the manufacture of printed circuit boards (column 1 lines 32-43, columns 3-4 lines 51-2). Accordingly, it would have been obvious to one of ordinary skill in the art to make the printed circuit boards of Jackson et al. out of polyimide substrates with a reasonable expectation of

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successfully forming the circuit boards, as these are common substrates for forming printed circuit boards.

Referring to claim 3, Jackson et al. discloses applying a sensitizing treatment of stannous chloride since this solution comprises  $\text{Sn}^{+2}$  it would be an anti-drag-through agent (column 13 lines 50-55).

Referring to claims 4-7, the examiner takes official notice that it is well known in the art to use a catalyst comprising Sn and Pd when electrolessly plating a non-metallic substrate (see US Patent 3,926,932 (column 3 lines 1-7).

Referring to claims 8 and 9, Jackson et al. discloses applying an accelerator (columns 13-14 lines 67-9, figure 2).

Referring to claim 10, Jackson et al. discloses cleaning the substrate (column 13 lines 28-49).

Referring to claim 12, Jackson et al. discloses that the deposited metal is Cu (column 2 lines 26-37).

Referring to claim 13, the substrate is flexible as discussed above.

Referring to claim 15, Jackson et al. discloses that the substrate has through holes (column 14 lines 40-44).

Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al. in view of Lerner in further view of Goffredo et al. (US Patent No 4,576,685).

Referring to claim 11, Jackson et al. in view of Lerner disclose all of the features of this claim as discussed above except they do not disclose applying and anti-

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tarnishing solution and baking. However Goffredo et al. teaches applying an anti-tarnish solution then drying the substrate in order to prevent the copper from oxidizing (tarnishing) (column 8 lines 16-41). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jackson et al. in view of Lerner to use an anti-tarnishing and drying step to prevent oxidation of the electrolessly deposited Cu as suggested by Goffredo et al..

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard E. Abramowitz whose telephone number is 571-272-8557. The examiner can normally be reached on monday-friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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*HEA*  
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*Michael Cleveland*  
MICHAEL CLEVELAND  
PRIMARY EXAMINER